# TABLE OF CONTENTS

## VOLUME 52


Abstracts of Papers Presented at the 1965 Meetings of the Genetics Society of America 425–486

ALIKHANIAN, S. I., J. RUBICAS, and V. N. KRYLOV, Genetical transformation of T4 phage ..... 31–41

ASHMAN, R. B., Paramutagenic action of mutants from maize plants heterozygous $R^rR^{st}$ ..... 835–841

ASHTON, G. C., Cattle serum transferrins: A balanced polymorphism? ..... 983–997

BAER, DEE, Asynchronous replication of DNA in a heterochromatic set of chromosomes in *Pseudococcus obscurus* ..... 275–285

BAKER, WILLIAM K., and JOHN A. SWATEK, A more critical test of hypotheses of crossing over which involve sister-strand exchange ..... 191–202

BARRATT, R. W., G. B. JOHNSON, and W. N. OGATA, Wild-type and mutant stocks of *Aspergillus nidulans* ..... 233–246

BAYLOR, MARTHA BARNES, NEVILLE SYMONDS, and ANITA Y. HESSLER, The *h* region of bacteriophage T2H, with special reference to an anomalous mutant ..... 539–551

BERGER, HILLARD, Genetic analysis of T4D phage heterozygotes produced in the presence of 5-fluorodeoxyuridine ..... 729–746

BERNSTEIN, HARRIS, R. S. EDGAR, and G. H. DENHARDT, Intragenic complementation among temperature sensitive mutants of bacteriophage T4D ..... 987–1002

BHATIA, C. R., and K. R. NARAYANAN, Genetic effects of ethyl methanesulfonate in combination with copper and zinc ions on *Arbidopsis thaliana* ..... 577–581

BOWEN, SARANE THOMPSON, The genetics of *Artemia salina*. V. Crossing over between the X and Y chromosomes ..... 695–710

BOWMAN, JAMES T., JR., Spontaneous reversion of the white-ivory mutant of *Drosophila melanogaster* ..... 1069–1079

BRINK, R. A., and J. VENKATESWARLU, Corrigenda ..... 1355

BUTTERWORTH, F. M., and R. C. KING, The developmental genetics of apterous mutants of *Drosophila melanogaster* ..... 1153–1174

CHANDLEY, ANN C., Application of the "distributive pairing" hypothesis to problems of segregation in translocation heterozygotes of *Drosophila melanogaster* ..... 247–258

CHATTERJEE, N. K., A. L. CASPAR, and W. R. SINGLETON, Genetic effects of ethyl methanesulfonate and gamma ray treatment of the proembryo in maize ..... 1101–1111

CHU, ERNEST H. Y., Effects of ultraviolet radiation on mammalian cells. II. Differential UV and X-ray sensitivity of chromosomes to breakage in 5-aminouracil synchronized cell populations ..... 1279–1294

CHURCH, KATHLEEN, Replication of chromatin in mouse mammary epithelial cells grown in vitro ..... 843–849

CLAYTON, FRANCES E., Genetic effects from simultaneous irradiation of immature and mature *Drosophila virilis* males ..... 1081–1092

COLSON, C., S. W. GLOVER, N. SYMONDS, and K. A. STACEY, The location of the genes for host-controlled modification and restriction in *Escherichia coli* K-12 ..... 1043–1050

Corrigenda, Volumes 50, 51, and 52 ..... 1355

COYLE, MARIE B., and THAD H. PITTENGER, Mitotic recombination in pseudo-wild types of Neurospora ..... 609–625

CREECH, ROY G., Genetic control of carbohydrate synthesis in maize endosperm ..... 1175–1186

CRIBBS, RICHARD M., Reversions of the L-ribulokinase structural gene of *Escherichia coli* ..... 99–106

DAWSON, PETER S., Genetic homeostasis and developmental rate in Tribolium ..... 873–885

Directory, Genetics Society of America ..... s18–s49

DUTTA, S. K., and V. W. WOODWARD, Complementation pattern changes at the *pyr-3* locus of *Neurospora crassa* ..... 391–396

EDGAR, R. S., and I. LIELAUSIS, Serological studies with mutants of phage T4D defective in genes determining tail fiber structure ..... 1187–1200

EDWARDSON, JOHN R., Gene control of non-Mendelian variegation in *Nicotiana tabacum* ..... 365–370

EGGERTSSON, GUDMUNDUR, and EDWARD A. ADELBERG, Map positions and specificities of suppressor mutations in *Escherichia coli* K-12 ..... 319–340

FAHMY, O. G., and MYRTLE J. FAHMY, Differential induction of chromosome deletions by natural and synthetic macromolecules in *Drosophila melanogaster* ..... 861–873

CONTENTS


FELSENSTEIN, JOSEPH, The effect of linkage on directional selection ..... 349–363
FINCK, DINA, YOSHITAKA SUYAMA, and ROWLAND H. DAVIS, Metabolic role of the pyrimidine-3 locus of Neurospora ..... 829–834
FISHER, KATHLEEN M., and HARRIS BERNSTEIN, The additivity of intervals in the *rIIA* cistron on phage T4D ..... 1127–1136
FOLEY, JEAN M., N. H. GILES, and C. F. ROBERTS, Complementation at the adenylosuccinase locus in *Aspergillus nidulans* ..... 1247–1263
FOLSOME, C. E., and MARILYN MONK, Genetic interference and recombination in phage T4: the role of heterozygotes ..... 119–127
FOLSOME, C. E., and M. MONK, Corrigenda ..... 1355
FREESE, ELIZABETH BAUTZ, The effects of urethan and hydroxyurethan on transforming DNA ..... 953–960
FRISTROM, JAMES W., Development of the morphological mutant cryptocephal of *Drosophila melanogaster* ..... 297–318
FULTON, CHANDLER, Continuous chromosome transfer in *Escherichia coli* ..... 55–74
GÁBOR, MAGDA, Transformation of streptomycin markers in rough strains of *Rhizobium lupini*. II. The relation between the determinant of streptomycin dependence and those for streptomycin resistance and sensitiveness ..... 905–913
GALLANT, J., and T. SPOTTSWOOD, The recombinogenic effect of thymidylate starvation in *Escherichia coli* merodiploids ..... 107–118
GARBER, E. D., and L. BERAHA, Genetics of phytopathogenic fungi. XIV. The parasexual cycle in *Penicillium expansum* ..... 487–492
Genetics Society of America Proceedings ..... s2–s58
GILLHAM, N. W., Induction of chromosomal and nonchromosomal mutations in *Chlamydomonas reinhardi* with N-methyl-N′-nitro-N-nitrosoguanidine ..... 529–537
GREGG, THOMAS G., and LUELLEN A. SMUCKER, Pteridines and gene homologies in the eye color mutants of *Drosophila hydei* and *Drosophila melanogaster* ..... 1023–1034
GRUNDER, A. A., G. SARTORE, and C. STORMONT, Genetic variation in red cell esterases of rabbits ..... 1345–1353
HALEY, LESLIE E., Serum albumin polymorphism in quail and chicken-quail hybrids ..... 983–986
HALLAUER, ARNEL R., Inheritance of flowering in maize ..... 129–137
HANKS, G. D., Are deviant sex ratios in normal strains of Drosophila caused by aberrant segregation? ..... 259–266
HASKINS, F. A., and T. KOSUGE, Genetic control of the metabolism of *o*-hydroxycinnamic acid precursors in *Melilotus alba* ..... 1059–1068
HAYMAN, D. L., and P. G. MARTIN, Sex chromosome mosaicism in the marsupial genera Isodon and Perameles ..... 1201–1206
HEDDLE, JOHN A., Randomness in the formation of radiation-induced chromosome aberrations ..... 1329–1334
HERRIOTT, ROGER M., Structure of the hybrid transforming unit ..... 1235–1246
HESSLER, ANITA Y., Acridine resistance in bacteriophage T2H as a function of dye penetration measured by mutagenesis and photoinactivation ..... 711–722
HINTON, CLAUDE W., The effects of heterozygous autosomal translocations of recombination in the X chromosome of *Drosophila melanogaster* ..... 971–982
HUBBY, JOHN L., and LYNN H. THROCKMORTON, Protein differences in Drosophila. II. Comparative species genetics and evolutionary problems ..... 203–215
ITO, JUNETSU, and IRVING P. CRAWFORD, Regulation of the enzymes of the tryptophan pathway in *Escherichia coli* ..... 1303–1316
JAKOB, HEDWIG, Complémentation entre mutants a deficience respiratoire de *Saccharomyces cerevisiae*: Etablissement et regulation de la respiration dans les zygotes et dans leur proche descendance ..... 75–98
JAMES, ALLEN P., MARY M. MACNUTT, and PAMELA M. MORSE, The influence of dose on the spectrum of radiation-induced mutants affecting a quantitative character in yeast ..... 21–29
JUDD, B. H., Chromosome pairing and recombination in *Drosophila melanogaster* ..... 1229–1233
KÄFER, ETTA, Origins of translocations in *Aspergillus nidulans* ..... 217–232
KIMURA, MOTOO, Attainment of quasi linkage equilibrium when gene frequencies are changing by natural selection ..... 875–890
KINDRED, BERENICE, Selection for temperature sensitivity in scute Drosophila ..... 723–728
KRISTJANSSON, F. K., and C. G. HICKMAN, Subdivision of the allele $Tf^D$ for transferrins in Holstein and Ayshire cattle ..... 627–630
LEVINS, RICHARD, Theory of fitness in a heterogeneous environment. V. Optimal genetic systems ..... 891–904
MAGALHÃES, L. E. DE, J. S. DE TOLEDO, and A. BRITO DA CUNHA, The nature of lethals in *Drosophila willistoni* ..... 599–608
MARTIN, J., Interrelation of inversion systems in the midge *Chironomus intertinctus* (Diptera: Nematocera). II. A nonrandom association of linked inversions ..... 371–383

CONTENTS


MARZLUF, GEORGE A., Enzymatic studies with the suppressor of vermilion of *Drosophila melanogaster* ..... 503–512

MCDOUGALL, K. J., and V. W. WOODWARD, Suppression of arginine and pyrimidine-requiring mutants of *Neurospora crassa* ..... 397–406

MERRELL, DAVID J., Competition involving dominant mutants in experimental populations of *Drosophila melanogaster* ..... 165–189

MIKI, T., Z. MINAMI, and Y. IKEDA, The genetics of alkaline phosphatase formation in *Bacillus subtilis* ..... 1093–1100

MILKMAN, ROGER D., The genetic basis of natural variation. VII. The individuality of polygenic combinations in Drosophila ..... 789–799

MOLL, R. H., J. H. LONNQUIST, J. VÉLEZ FORTUNO, and E. C. JOHNSON, The relationship of heterosis and genetic divergence in maize ..... 139–144

MUKAI, TERUMI, SADAO CHIGUSA, and ISAO YOSHIKAWA, The genetic structure of natural populations of *Drosophila melanogaster*. III. Dominance effect of spontaneous mutant polygenes controlling viability in heterozygous genetic backgrounds ..... 493–501

MUKHERJEE, RAMEN, Mutagenic action of mitomycin C on *Drosophila melanogaster* ..... 947–951

MURRAY, NOREEN E., Cysteine mutant strains of Neurospora ..... 801–808

NAKAMURA, KAZUO, and C. SHIELDS GOWANS, Genetic control of nicotinic acid metabolism in *Chlamydomonas eugametos* ..... 931–945

NARAIN, P., The description of gene action and interaction with multiple alleles in continuous variation ..... 43–53

NASSAR, RAJA F., Effect of correlated gene distribution due to sampling on the diallel analysis ..... 9–20

NASSAR, RAJA F., Variation of scutellar bristles in Drosophila. VIII. Selection and polygenes ..... 915–923

NEUFFER, M. G., Crossing over in heterozygotes carrying different mutable alleles at the $A_1$ locus in maize ..... 521–528

NEWCOMBE, HOWARD B., and JOHN F. MCGREGOR, Heritable effects of radiation on body weight in rats ..... 851–860

PFAHLER, P. L., Fertilization ability of maize pollen grains. I. Pollen sources ..... 513–520

PELZER, CHARLES F., Genetic control of erythrocytic esterase forms in *Mus musculus* ..... 819–828

RANDERSON, SHERMAN, Erythrocyte esterase forms controlled by multiple alleles in the deer mouse ..... 999–1005

RATTY, FRANK J., The mutability of loci in an X-chromosome duplication of *Drosophila melanogaster* ..... 1113–1117

RÉDEI, G. P., Non-Mendelian megagametogenesis in Arabidopsis ..... 857–872

RENDEL, J. M., B. L. SHELDON, and D. E. FINLAY, Canalisation of development of scutellar bristles in Drosophila by control of the scute locus ..... 1137–1151

RICHARDSON, R. H., and KEN-ICHI KOJIMA, The kinds of genetic variability in relation to selection responses in Drosophila fecundity ..... 583–598

RILES, LINDA, Inversion polymorphism and embryonic lethality in *Drosophila robusta* ..... 1335–1343

RINEHART, ROBERT R., and F. J. RATTY, Mutation in *Drosophila melanogaster* cultured on irradiated food ..... 1119–1126

ROBERTS, PAUL A., Asymmetrical exchange in adjacent tandem duplications ..... 1017–1022

RUDKIN, GEORGE T., The relative mutabilities of DNA in regions of X chromosome of *Drosophila melanogaster* ..... 665–681

SANDERSON, KENNETH E., and M. DEMEREC, The linkage map of *Salmonella typhimurium* ..... 897–913

SANKARANARAYANAN, K., Further data on the genetic loads in irradiated experimental populations of *Drosophila melanogaster* ..... 153–164

SASTRY, G. R. K., H. B. COOPER, JR., and R. A. BRINK, Paramutation and somatic mosaicism in maize ..... 407–424

SAUL, G. B., 2ND, P. W. WHITTING, S. W. SAUL, and C. A. HEIDNER, Wild-type and mutant stocks of Mormoniella ..... 1317–1327

SCHOOLEY, JAMES B., The incompatibility mechanism of the biennis group I races of Oenothera ..... 145–152

SCHWARTZ, DREW, Genetic studies on mutant enzymes in maize. VI. Elimination of allelic isozyme variation by glyceraldehyde treatment ..... 1295–1302

SCHWARTZ, DREW, LUCY FUCHSMAN, and KATHRINE H. MCGRATH, Allelic isozymes of the pH 7.5 esterase in maize ..... 1265–1268

SICARD, A. MICHEL, and HARRIETT EPHRUSSI-TAYLOR, Genetic recombination in DNA-induced transformation of pneumococcus. II. Mapping the *amiA* region ..... 1207–1227

SIEGEL, P. B., Genetics of behavior: Selection for mating ability in chickens ..... 1269–1277

SILAGI, SELMA, Interactions between an extrachromosomal factor, poky, and nuclear genes in *Neurospora crassa* ..... 341–347

SORGER, GEORGE J., and NORMAN H. GILES, Genetic control of nitrate reductase in *Neurospora crassa* ..... 777–788

CONTENTS


SPASSKY, B., TH. DOBZHANSKY, and W. W. ANDERSON, Genetics of natural populations. XXXVI Epistatic interactions of the components of the genetic load in *Drosophila pseudoobscura* ..... 653–664

SPEICHER, B. R., KATHRYN G. SPEICHER, and FRANKLIN L. ROBERTS, Genetic segregation in the unisexual wasp Devorgilla ..... 1035–1041

STEFFENSEN, DALE M., Proteins of sperm nuclei examined by autoradiography at fertilization and subsequent nuclear divisions in Lilium ..... 631–641

STEWART, ROBERT N., The origin and transmission of a series of plastogene mutants in Dianthus and Euphorbia ..... 925–947

STRIGINI, P., On the mechanism of spontaneous reversion and genetic recombination in bacteriophage T4 ..... 759–776

SUEOKA, NOBORU and HIROSHI YOSHIKAWA, The chromosome of *Bacillus subtilis*. I. Theory of marker frequency analysis ..... 747–757

SUYAMA, Y., and J. R. PREER, JR., Mitochondrial DNA from Protozoa ..... 1051–1058

THOMPSON, K. H., B. WALLACE, and W. T. FEDERER, A mathematical model for the distribution of lengths of chromosomal deficiencies involving a specific locus .. 887–896

TOBARI, IZUO, and MASATOSHI NEI, Genetic effects of X rays on quantitative characters in a heterogeneous population of *Drosophila melanogaster* ..... 1007–1015

UNDERKOFLER, JUDITH W., and M. R. IRWIN, Further studies of interaction products of genes effecting cellular antigens in species hybrids in Columbidae ..... 961–970

VAN VLECK, L. D., and G. E. BRADFORD, Genetic covariances among relatives for dairy lactation records ..... 385–390

WALEN, KIRSTEN H., Spatial relationships in the replication of chromosomal DNA .. 915–929

WEIL, JON, BETTY TERZAGHI, and JEAN CRASEMANN, Partial diploidy in phage T4 .. 683–693

WHITE, M. J. D., J. B. S. Haldane ..... 1–7

WOLSTENHOLME, DAVID R., A DNA and RNA-containing cytoplasmic body in *Drosophila melanogaster* and its relation to flies ..... 949–975

WOOLF, CHARLES M., Genetic divergence among tumorous-head strains of *Drosophila melanogaster* ..... 809–817

WORTIS, HENRY H., A gene locus concerned with an antigenic serum substance in *Mus musculus* ..... 267–273

YAN, YANHON, and M. DEMEREC, Genetic analysis of pyrimidine mutants of *Salmonella typhimurium* ..... 643–651

YANG, SHUNG-JUN, Corrigenda ..... 1355

YEN, TERENCE, T. T., and EDWARD GLASSMAN, Electrophoretic variants of xanthine dehydrogenase in *Drosophila melanogaster* ..... 977–981

YOUNG, C. W., J. E. LEGATES, and B. R. FARTHING, Prenatal and postnatal influences on growth, prolificacy and maternal performance in mice ..... 553–561

YOUNG, C. W., and J. E. LEGATES, Genetic, phenotypic, and maternal interrelationships of growth in mice ..... 563–576

YOUNG, S. S. Y., and B. L. SHELDON, Correlated response in scutellar bristles to selection for abdominal bristles in *Drosophila melanogaster* ..... 287–295


## DATES OF ISSUE, Volume 52

| *Month* | *Issued* | *Pages* |
|---|---|---|
| July | July 1, 1965 | 1–246 |
| August, Part 1 | July 30, 1965 | 247–424 |
| Part 2 | July 30, 1965 | 425–486, s2–s58 |
| September | September 10, 1965 | s59–s62, 487–492 |
| October | September 30, 1965 | 711–860 |
| November | November 10, 1965 | 861–1100 |
| December | December 15, 1965 | 1101–1364 |